

CS1-42

Thermometers, Clinical

U. S. DEPARTMENT OF COMMERCE

JESSE H. JONES, Secretary

NATIONAL BUREAU OF STANDARDS

LYMAN J. BRIGGS, Director

# CLINICAL THERMOMETERS

(THIRD EDITION)

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COMMERCIAL STANDARD CS1-42

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Effective Date for New Production From  
February 20, 1942



A RECORDED VOLUNTARY STANDARD  
OF THE TRADE

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**PROMULGATION**  
of  
**COMMERCIAL STANDARD CS1-42**  
for  
**CLINICAL THERMOMETERS**  
(Third Edition)

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On March 30, 1928, a general conference of representative manufacturers, distributors, users, and representatives of laboratories adopted a recommended commercial standard for clinical thermometers which was accepted by the industry and published as Commercial Standard CS1-28. A revision recommended by the Standing Committee and accepted by the trade was issued in 1932, designated CS1-32.

On October 17, 1941, a second revision recommended by the Standing Committee was circulated for written acceptance; those concerned have since accepted this revision and approved for promulgation by the United States Department of Commerce, through the National Bureau of Standards, the revised standard as shown herein.

The standard is effective for new production from February 20, 1942.

Promulgation recommended.

I. J. Fairchild,  
*Chief, Division of Trade Standards.*

Promulgated.

Lyman J. Briggs,  
*Director, National Bureau of Standards.*

Promulgation approved.

Jesse H. Jones,  
*Secretary of Commerce.*

# CLINICAL THERMOMETERS

(Third Edition)

## COMMERCIAL STANDARD CS1-42

### PURPOSE

1. The purpose of this commercial standard is to provide a specification and methods of testing clinical thermometers as a basis for certification of quality and accuracy; to assure the purchaser that the thermometer has been tested and found to meet the requirements of a nationally recognized standard; and to promote fair competition among manufacturers.

### SCOPE

2. This standard applies to maximum self-registering thermometers of the types commonly used for measuring body temperatures. The certificate specified in section 10 of this standard, when issued by a manufacturer, or certification by a testing laboratory that a thermometer has been found to meet the requirements of this standard, means that the thermometer has been examined and tested and has been found to meet the requirements and has passed the test specified. The requirements and tests may be outlined as follows:

Construction.

Aging.

Pigment test.

Test for entrapped gas.

Test for hard shakers.

Tests for accuracy.

Test for retreating index.

It usually will be found advantageous to make the tests in the order listed.

### DETAIL REQUIREMENTS

3. *Construction.*—All thermometers shall meet the construction requirements given in paragraphs 3a to 3k, inclusive.

3a. The bulbs shall be made of the type of glass known as "normal" or equally satisfactory thermometric glass. Colored bulbs or bulbs blown from the material of the stem shall not be used.

3b. Fahrenheit thermometers shall be graduated in  $0.2^{\circ}$  F; each degree mark and the mark at the normal point shall be longer than the intervening marks.

3c. Centigrade thermometers shall be graduated in  $0.1^{\circ}$  C; each degree and half-degree mark shall be longer than the intervening marks.

3d. The graduation marks shall be substantially straight, regularly spaced, of uniform width, and perpendicular to the axis of the stem. The width of the marks shall be not greater than 0.012 inch nor less

than 0.004 inch, but the width shall not in any case be more than one-half the length of a graduation interval. (The length of a graduation interval is the distance from the center of any graduation mark to the center of either of the adjacent marks.)

3e. Numerals shall be etched on the scale at even-numbered degree marks on Fahrenheit thermometers and at every degree mark, except as hereinafter provided on centigrade thermometers. (See par. 3h.)

3f. There shall be not more than 10.0° F or 5.5° C per inch of scale.

3g. The range of scale shall be at least from 96° to 106° F or 35° to 41° C. The 96.0° F mark or the 35.5° C mark shall be not less than ½ inch from the top of the constriction; that is, from the point at which the capillary resumes its normal shape above the constriction. The 106° F or 41° C mark shall be at least ¼ inch from the end of the thermometer or ¼ inch below any part of any cap attached to the thermometer.

3h. The normal point, except for veterinary use, shall be designated by an arrow or other suitable mark at 98.6° on Fahrenheit thermometers and in lieu of the numeral 37° on centigrade thermometers.

3i. Each thermometer shall bear in legibly engraved characters the name or trade-mark of the manufacturer and either a serial number, or a serial number and year, to provide complete identification.

3j. The marks, numerals, and identification marks shall be filled with pigment, so as to be readily legible.

3k. All thermometers shall be free from any defects which impair the accuracy or reliability or seriously mar the appearance.

4. *Aging.*—All thermometers shall be aged for a period of at least 4 months, after completion of the constriction, before being tested for conformity with this standard.

5. *Pigment test.*

5a. Sample thermometers shall be immersed in a 5 percent (by weight) phenol-in-water solution for a period of 1 hour at a temperature between 70° and 90° F without the indication of removal of the coloring matter or its appearance in the solution. All thermometers shall retain their pigment after the completion of all tests herein required.

5b. It is not necessary to submit each individual thermometer to the phenol test, and each thermometer of a lot may be considered to have passed or failed in this test if representative samples taken from the lot shall pass or fail in this test.

6. *Test for entrapped gas.*

6a. *Gas in bulb.*—Thermometers in which inspection shows the presence of gas in the bulb shall be rejected.

6b. *Gas in mercury column.*—The thermometers shall be shaken down if necessary and then heated so that the reading is about 96° F or 35.5° C and the mercury above the constriction shall then be shaken toward the top of the thermometer. The bulbs shall then be heated to about 106° F or 41° C and the thermometers shaken down as specified under "Test for hard shakers." If entrapped gas is found in the mercury column at any time after making this test, the thermometer shall be rejected.

7. *Test for hard shakers.*

7a. All thermometers, after having been heated to 106° F or 41° C, shall be mounted in a centrifuge, and whirled at the specified speed. For a centrifuge in which the ends of the bulbs are 17 cm from the

axis of rotation, the specified speed is 580 rpm. For a centrifuge in which the ends of the bulbs are 32 cm from the axis of rotation, the specified speed is 400 rpm. The larger type is preferred. When whirled at the specified speed, the index shall fall below  $96^{\circ}$  F or  $35.5^{\circ}$  C.

7b. It is not necessary to heat up and shake down the thermometers especially for this test, since these operations are performed during the "test for entrapped gas." The thermometers may, therefore, be examined to determine whether the index has fallen below  $96^{\circ}$  F or  $35.5^{\circ}$  C after they have been shaken down in the test for entrapped gas.

#### 8. Tests for accuracy.

8a. Thermometers shall be compared at  $98^{\circ}$ ,  $102^{\circ}$ , and  $106^{\circ}$  F, or  $37^{\circ}$ ,  $39^{\circ}$ , and  $41^{\circ}$  C, with certified clinical standards by heating them in a well-stirred water bath, removing from bath, and reading. Thermometers not graduated above  $106^{\circ}$  F or  $41^{\circ}$  C may be compared at  $105.7^{\circ}$  F or  $40.8^{\circ}$  C. The temperature of the bath shall be raised at a substantially uniform rate during the last 2 minutes before the test temperature is reached, and the rise during this 2-minute period shall not be less than  $0.15^{\circ}$  F or  $0.08^{\circ}$  C, nor more than  $0.20^{\circ}$  F or  $0.11^{\circ}$  C. The thermometers shall be removed from the bath as soon as the temperature of test is reached, except in the second test at  $106^{\circ}$  F or  $41^{\circ}$  C, where the procedure specified under "test for retreating index" shall be followed. After removing from the bath, the thermometers are held in a horizontal position and the readings observed. A suitable magnifying glass should be used and the readings estimated to the nearest one-tenth division (graduation interval) or if preferred, to the nearest  $0.01^{\circ}$  on Fahrenheit thermometers, and recorded.<sup>1</sup>

8b. Two independent comparisons shall be made on each thermometer at each test point. The average of the two readings at  $98^{\circ}$  and  $102^{\circ}$  F, respectively, or at  $37^{\circ}$  and  $39^{\circ}$  C, respectively, shall not differ from the corrected indications of the standard by more than  $0.20^{\circ}$  F or  $0.11^{\circ}$  C. Neither reading shall differ by more than  $0.25^{\circ}$  F ( $0.14^{\circ}$  C) from the corrected indication. The average of the readings at  $106^{\circ}$  F or  $41^{\circ}$  C shall not differ from the corrected indication of the standard by more than  $0.30^{\circ}$  F or  $0.17^{\circ}$  C. Neither reading shall differ by more than  $0.35^{\circ}$  F ( $0.19^{\circ}$  C) from the corrected indication.

8c. If the two readings on any thermometer at more than one test point differ from each other by more than  $0.15^{\circ}$  F or  $0.08^{\circ}$  C, the thermometer shall be rejected for failure to repeat readings. If the difference between the two readings at any one (and only one) test

<sup>1</sup> By the use of a suitable reading device, giving a magnification of about five times, it is a comparatively simple matter to estimate the readings, so that the error in reading rarely exceeds one-tenth of a division; that is,  $0.02^{\circ}$  on Fahrenheit thermometers or  $0.01^{\circ}$  on centigrade thermometers. It has been found that estimating to one-tenth division is more rapid than estimating to the nearest  $0.1^{\circ}$ , because with the latter, there are many doubtful cases which take time to decide, whereas in reading to one-tenth division the observer decides quickly, because he does not worry about whether the reading should be, for example,  $0.04^{\circ}$  or  $0.06^{\circ}$ , on a Fahrenheit thermometer, and simply says one or the other or, perhaps,  $0.05^{\circ}$  in such a case. In this method of reading, one person reads the thermometers and another records the readings as they are called out.

In making the readings, allowance should be made for the width of the graduation marks. Take, for example, a Fahrenheit thermometer in which the width of the mark is 0.4 of the length of a graduation interval. The interval is  $0.2^{\circ}$ , so that the width of the mark corresponds to  $0.08^{\circ}$ . In such a thermometer, if the top of the mercury column is opposite the middle of the  $102^{\circ}$  mark, the reading would be  $102^{\circ}$ , whereas if it were opposite the lower edge of the mark, the reading would be  $101.96^{\circ}$ , and if opposite the upper edge, the reading would be  $102.04^{\circ}$ . A fine mark on a thermometer with a very open scale, say  $10^{\circ}$  F in a scale length of 2 inches, would have a width corresponding to about  $0.02^{\circ}$  F, whereas the width of a broad mark on a thermometer having  $10^{\circ}$  F to 1 inch, would correspond to about  $0.1^{\circ}$  F.

Persons not familiar with clinical thermometers can learn to read them satisfactorily, estimating to one-tenth division, in a few hours; on the other hand, persons accustomed to reading clinical thermometers to the nearest  $0.1^{\circ}$  may find considerable difficulty in learning to estimate to one-tenth division. The use of the method of reading to one-tenth division is implied in the "tests for accuracy", and uniform and satisfactory use of these tests depends upon using this method of reading.

point, on any thermometer, is more than  $0.15^{\circ}$  F or  $0.08^{\circ}$  C, the thermometer shall be completely retested at the three test points. If in the retest, the difference between the two readings at one or more test points exceeds  $0.15^{\circ}$  F or  $0.08^{\circ}$  C, the thermometer shall be rejected for failure to repeat readings. If, however, in the retest the two readings at each of the test points differ from each other by not more than  $0.15^{\circ}$  F or  $0.08^{\circ}$  C, the thermometer shall be considered as repeating its readings satisfactorily. All readings shall be recorded on suitable forms and the record shall be kept for at least 2 years.

8d. Errors in the value of an interval between adjacent test points shall not exceed  $0.30^{\circ}$  F or  $0.17^{\circ}$  C.

9. *Test for retreating index.*—In the first test for accuracy at  $106^{\circ}$  F or  $41^{\circ}$  C, the thermometers are removed from the bath as soon as the test temperature is reached. In the second test at  $106^{\circ}$  F or  $41^{\circ}$  C, the bath is brought up to the test temperature and then allowed to cool slowly to  $105^{\circ}$  F or  $40.4^{\circ}$  C or below, at a uniform rate not exceeding  $1^{\circ}$  F or  $0.55^{\circ}$  C in 3 minutes. The thermometers are then removed from the bath and read, and the readings recorded as before. The average of the two readings on each thermometer and their difference shall be within the limits specified under "tests for accuracy."

### CERTIFICATION

10a. *Certificate.*—Each thermometer certified by the manufacturer shall be accompanied by a certificate which shall include the following statement:

-----  
(Place)

-----  
(Date)

We, the undersigned manufacturers, hereby certify that our registering clinical thermometer marked No. ----- has been examined and tested and found to meet all of the requirements and tests specified in the United States Department of Commerce Commercial Standard CS1-42 for Clinical Thermometers. This certificate is supported by a record of test of this thermometer. This record will be kept on file at least two years.

-----  
(Company)

10b. When thermometers are sold to hospitals or similar institutions, the above statement on the invoice is acceptable in lieu of a certificate with each thermometer.

### EFFECTIVE DATE

The standard is effective for new production from February 20, 1942.

### STANDING COMMITTEE

The following individuals comprise the membership of the standing committee, which is to review, prior to circulation for acceptance,

revisions proposed to keep the standard abreast of progress. Each organization nominated its own representatives. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

*Manufacturers:*

DR. BRADFORD NOYES, JR. (chairman), Taylor Instrument Companies, Rochester, N. Y.

PETER J. PECORELLA, Pecorella Manufacturing Co., 64 Stanhope St., Brooklyn, N. Y.

OTTO W. SCHLEGELMILCH, Schlegelmilch Brothers, 31-31 Thomson Ave., Long Island City, N. Y.

*Distributors:*

HERBERT M. BINGHAM, Tower Bldg., Washington, D. C. Representing National Wholesale Druggists' Association.

*Users:*

WILLIAM A. GATELY, Hospital Bureau of Standards and Supplies, Inc., 247 Park Ave., New York, N. Y. Representing American Hospital Association.

MRS. HARRIET R. HOWE, American Home Economics Association, 620 Mills Bldg., Washington, D. C.

FRIEND LEE MICKLE, Bureau of Laboratories, State Department of Health, Hartford, Conn.

MAJ. HUBERT M. NICHOLSON, M. C., Medical Section, New York General Depot, War Department, Brooklyn, N. Y.

D. H. PALMER, Hospital Bureau of Standards and Supplies, Inc., 247 Park Ave., New York, N. Y.

*General Interest:*

DR. IRVIN KERLAN, Drug Division, Food and Drug Administration, Federal Security Agency, Washington, D. C.

E. F. MUELLER, National Bureau of Standards, Washington, D. C.

F. W. REYNOLDS (secretary), Division of Trade Standards, National Bureau of Standards, Washington, D. C.

## HISTORY OF PROJECT

*General conference.*—On November 18, 1927, a committee representing the Associated Thermometer Manufacturers, a group of manufacturers of clinical thermometers, requested the assistance of the National Bureau of Standards in establishing a commercial standard for clinical thermometers, to encourage the production and sale of reliable thermometers, and to protect purchasers from inferior and unreliable instruments. Preliminary conferences held in New York City on December 15, 1927, and February 24, 1928 drafted a proposed standard based on tests then in use by the National Bureau of Standards. A general conference held in Washington, D. C., on March 30, 1928, adopted the proposal, with some modifications, and a recommended commercial standard was circulated to the industry for written acceptance on April 18, 1928. On June 12 the National Bureau of Standards announced that sufficient acceptances had been received and that the commercial standard, designated CS1-28, would become effective for new production on October 1, 1928, and for clearance of existing stocks on March 30, 1929.

On November 23, 1929, an adherence survey was conducted, indicating that approximately 82 percent of production was being manu-

factured in conformity with the standard. The standard was reaffirmed in its existing form on March 4, 1930.

*First revision.*—On February 19, 1931, a well-attended meeting of the advisory committee, composed of manufacturers of clinical thermometers and representatives of the National Bureau of Standards, was held in New York, N. Y., to discuss the advisability of revising the commercial standard and to suggest a desirable form of revision. An adherence survey was conducted in September of that year, resulting in a reported 79 percent of adherence and numerous suggestions for the improvement of the standard.

A strong desire was expressed for coordination of the commercial standard with regulations enforced by various States and municipalities. Accordingly, a meeting of representatives of the standing committee with representatives of the regulatory bodies was held in New York, N. Y., on January 12, 1932. As a result of this meeting, a recommended revision was drafted by the standing committee and circulated to the industry for acceptance on February 24, 1932. On March 30, 1932, the establishment of the revision was announced, and the second edition, designated CS1-32, became effective for new production on June 1, 1932.

*Second revision.*—On February 20, 1940, the standing committee met in New York City to consider suggestions for revision that had been received since the establishment of the second edition of the standard. At that meeting a proposed revision tightening tolerances on accuracy and requiring that records of test be held on file for 2 years was drafted and submitted to the manufacturers advisory committee on March 21, 1940. On March 14, 1941, a meeting of the advisory committee drafted a counter proposal that the standing committee considered at a meeting on May 15, 1941. The standing committee was unable to accept the counter proposal in its entirety and reverted to its original proposal and, with some modifications, recommended its circulation to the industry for acceptance. The recommended revision was circulated to producers, distributors, and users for acceptance on October 17, 1941, and the third edition, designated CS1-42, becoming effective for new production from February 20, 1942, was announced on January 20, 1942.

### ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date \_\_\_\_\_

Division of Trade Standards,  
National Bureau of Standards,  
Washington, D. C.

Gentlemen:

Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard CS1-42 as our standard of practice in the

Production <sup>1</sup>      Distribution <sup>1</sup>      Use <sup>1</sup>      Testing <sup>1</sup>  
of clinical thermometers.

We will assist in securing its general recognition and use, and will cooperate with the standing committee to effect revisions of the standard when necessary.

Signature of individual officer \_\_\_\_\_  
(In ink)

(Kindly typewrite or print the following lines)

Name and title of above officer \_\_\_\_\_

Organization \_\_\_\_\_  
(Fill in exactly as it should be listed)

Street address \_\_\_\_\_

City and State \_\_\_\_\_

<sup>1</sup>Please designate which group you represent by drawing lines through the other three. Please file separate acceptances for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade papers, colleges, etc., desiring to record their general approval, the words "in principle" should be added after the signature.

(Cut on this line)

## TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of those concerned. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the interested groups as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: first, to act as an unbiased coordinator to bring all interested parties together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by a satisfactory majority of production or consumption in the absence of active, valid opposition, the success of the project is announced. If, however, in the opinion of the standing committee or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

## ACCEPTORS

The organizations and individuals listed below have accepted this specification as their standard of practice in the production, distribution, and use of clinical thermometers. Such endorsement does not signify that they may not find it necessary to deviate from the standard, nor that producers so listed guarantee all of their products in this field to conform with the requirements of this standard. Therefore, specific evidence of quality certification should be obtained where required.

### ASSOCIATIONS

American Home Economics Association, Washington, D. C. (In Principle.)  
 American Hospital Association, Simplification & Standardization Committee, Philadelphia, Pa.  
 American Institute of Homeopathy, Ft. Morgan, Colo.  
 American Protestant Hospital Association (Arkansas Hospital Association), Little Rock, Ark.  
 American Veterinary Medical Association, Chicago, Ill.  
 Ashland Hospital Association, Inc., Ashland, Oreg.  
 Associated Clinics & Hospitals, Inc., Minneapolis, Minn.  
 A. T. & S. F. Hospital Association, The, Topeka, Kans.  
 Ball Memorial Hospital Association, Muncie, Ind.  
 Bethesda Hospital & Deaconess Association, Cincinnati, Ohio.  
 Community Hospital Association of Battle Creek, Battle Creek, Mich.  
 Englewood Hospital Association, Chicago, Ill.  
 Evanston Hospital Association, Evanston, Ill.  
 Greenwich Hospital Association, The, Greenwich, Conn.  
 Hospital Association of Philadelphia, Philadelphia, Pa.  
 Hospital Association Southern Pacific Lines in Texas & La., Houston, Tex.  
 Mary Immaculate Hospital Association, Jamaica, N. Y.  
 National Association of Chain Drug Stores, New York, N. Y.  
 National Council of Women, New York, N. Y.  
 National Wholesale Druggists' Association, New York, N. Y.  
 Newark Hospital Association, Newark, Ohio.  
 Uniontown Hospital Association, Uniontown, Pa.  
 Wisconsin Anti-Tuberculosis Association, Milwaukee, Wis.

### FIRMS

Agnew's State Hospital, Agnew, Calif.  
 Ahwahnee Sanatorium, Ahwahnee, Calif.  
 Akron, The City Hospital of, Akron, Ohio.  
 Alabama State Highway Department, Montgomery, Ala.  
 Alachua County Hospital, Gainesville, Fla.  
 Albany Hospital, Albany, N. Y.  
 Alexian Brothers' Hospital, Chicago, Ill.  
 Allegheny General Hospital, Pittsburgh, Pa.  
 Alton State Hospital, Alton, Ill.  
 Altoona Hospital, The, Altoona, Pa.  
 American College of Surgeons, Chicago, Ill.  
 Amsterdam City Hospital, Amsterdam, N. Y.  
 Ancker Hospital (City and County), St. Paul, Minn.  
 Anoka State Hospital, Anoka, Minn.  
 Arizona State Institutions, Phoenix, Ariz.  
 Arkansas Tuberculosis Sanatorium, Booneville, Ark.  
 Arkansas, University Hospital, Little Rock, Ark.  
 Arkansas, University of, School of Medicine, Little Rock, Ark.  
 Armstrong Cork Co., Lancaster, Pa.  
 Arnot-Ogden Memorial Hospital, Elyria, Ohio.  
 Ashland State Hospital, Ashland, Pa.  
 Audrain Hospital, Mexico, Mo.  
 Aultman Hospital, Canton, Ohio.  
 Baltimore City Hospitals, Baltimore, Md.  
 Bamberger & Co., L., Newark, N. J.  
 Barnes Hospital, St. Louis, Mo.  
 Barnstable County Sanatorium, Pacasset, Mass.  
 Bastrop General Hospital, Bastrop, La.  
 Baton Rouge General Hospital, Baton Rouge, La.  
 Beckley Hospital, Beckley, W. Va.  
 Becton, Dickinson & Co., Rutherford, N. J.

- Belmont Hospital, Worcester, Mass.  
 Berea College Hospital, Berea, Ky.  
 Bergen Pines, Bergen County Hospital, Ridgewood, N. J.  
 Berkeley Hospital, Berkeley, Calif.  
 Beth David Hospital, New York, N. Y.  
 Beth Israel Hospital, Boston, Mass.  
 Beth Moses Hospital, Brooklyn, N. Y.  
 Bethlehem Steel Corporation, Bethlehem, Pa.  
 Beverly Hospital, Beverly, Mass.  
 Binghamton State Hospital, Binghamton, N. Y.  
 Bismarck Hospital, Bismarck, N. Dak.  
 Blodgett Memorial Hospital, Grand Rapids, Mich.  
 Bluefield Sanitarium, Bluefield, W. Va.  
 Boerner's Prescription Pharmacy, Iowa City, Iowa.  
 Boston Lying-in Hospital, Boston, Mass.  
 Braddock General Hospital, Braddock, Pa.  
 Bradford Hospital, Bradford, Pa.  
 Bristol Hospital, Bristol, Conn.  
 Broad Street Hospital, Philadelphia, Pa.  
 Broadacres Sanatorium, Utica, N. Y.  
 Broadlawns Polk County Public Hospital, Des Moines, Iowa.  
 Brockton Hospital, Brockton, Mass.  
 Bronx Hospital, The, Bronx, N. Y.  
 Brookline, Board of Health Hospital, Brookline, Mass.  
 Brooklyn Hospital, The, Brooklyn, N. Y.  
 Brownsville General Hospital, Brownsville, Pa.  
 Bryan Memorial Hospital, Lincoln, Nebr.  
 Buffalo General Hospital, Buffalo, N. Y.  
 Buffalo State Hospital, Buffalo, N. Y.  
 Burbank Hospital, Fitchburg, Mass.  
 Burlington County Hospital For Insane, New Lisbon, N. J.  
 Burnham City Hospital, Champaign, Ill.  
 Butterworth Hospital, Grand Rapids, Mich.  
 California, State of, Bureau of Purchases, Sacramento, Calif.  
 Cambridge Sanatorium, Cambridge, Mass.  
 Camden County Tuberculosis Hospital, Grenloch, N. J.  
 Carney Hospital, South Boston, Mass. (In Principle.)  
 Carroll Dunham Smith Pharmacal Co., Orange, N. J.  
 Cedar Valley Hospital, Charles City, Iowa.  
 Central Islip State Hospital, Central Islip, N. Y.  
 Central Maine General Hospital, Lewiston, Maine.  
 Central Maine Tuberculosis Sanatorium, Fairfield, Maine.  
 Central State Hospital, Nashville, Tenn.  
 Central State Hospital, Petersburg, Va.  
 Central State Hospital, Waupun, Wis.  
 Central State Hospital, Lakeland, Ky.  
 Charity Hospital of Louisiana at New Orleans, New Orleans, La.  
 Charles S. Wilson Memorial Hospital, Johnson City, N. Y.  
 Charles T. Miller Hospital, The, Saint Paul, Minn.  
 Charles V. Chapin Hospital, Providence, R. I.  
 Charleston General Hospital & School for Nursing, Inc., Charleston, W. Va.  
 Charlotte Hungerford Hospital, The, Torrington, Conn.  
 Chester County Hospital, The, West Chester, Pa.  
 Chestnut Hill Hospital, Philadelphia, Pa.  
 Chicago State Hospital, Chicago, Ill.  
 Chicago University, Clinics of, Chicago, Ill.  
 Children's Country Home, Westfield, N. J.  
 Children's Hospital, The, Washington, D. C.  
 Children's Hospital, The, Akron, Ohio.  
 Children's Hospital, The, Cincinnati, Ohio.  
 Chippewa County Asylum, Chippewa Falls, Wis.  
 Christ Hospital, Jersey City, N. J.  
 Christian R. Holmes Hospital, Cincinnati, Ohio.  
 Church Home & Infirmary, The, Baltimore, Md.  
 Cincinnati General Hospital, Cincinnati, Ohio.  
 Cincinnati Orphan Asylum, Children's Convalescent Home of the, Cincinnati, Ohio.  
 Clarinda State Hospital, Clarinda, Iowa.  
 Clark Co., A. M., Chicago, Ill.  
 Clearfield Hospital School of Nursing, Clearfield, Pa.  
 Cleveland City Hospital, Cleveland, Ohio.  
 Cleveland Hospital Council, Cleveland, Ohio.  
 Cleveland State Hospital, Cleveland, Ohio.  
 Cleveland Tuberculosis Sanatorium (Sunny Acres), Warrensville, Ohio.  
 Cleveland, University Hospitals of, Cleveland, Ohio.  
 Clinton Prison, Dannemora, N. Y.  
 Coaldale State Hospital, Coaldale, Pa.  
 Colbert County Hospital, Sheffield, Ala.  
 Colorado General Hospital, Denver, Colo.  
 Colorado, State Home & Training School for Mental Defectives of, Grand Junction, Colo.  
 Colorado State Hospital, Pueblo, Colo.  
 Colorado State Soldiers & Sailors Home, Homelake, Colo.  
 Colorado, University of, School of Medicine & Hospitals, Denver, Colo.  
 Columbia County Asylum & Home, Wyolena, Wis.

- Columbia Hospital for Women, Washington, D. C.
- Columbia Sanatorium, Philmont, N. Y.
- Columbus Hospital, Great Falls, Mont.
- Columbus State Hospital, Columbus, Ohio.
- Colusa County Hospital, Colusa, Calif.
- Compton Sanitarium, Compton, Calif.
- Conemaugh Valley Memorial Hospital, The, Johnstown, Pa.
- Connecticut State Hospital, Middletown, Conn.
- Connellsville State Hospital, Connellsville, Pa.
- Cook County Psychopathic Hospital, Chicago, Ill.
- Cooley Dickinson Hospital, Northampton, Mass.
- Cornell Instrument Corporation, Brooklyn, N. Y.
- Coulter, Lawson B., Detroit, Mich.
- Creighton Memorial St. Joseph's Hospital, Omaha, Nebr.
- Dallas, City-County Hospital System of, Dallas, Tex.
- Dane County Asylum & Home, Verona, Wis.
- Dansville General Hospital, Dansville, N. Y.
- Danville State Hospital, Danville, Pa.
- Dayton State Hospital, Dayton, Ohio.
- Delaware Hospital, The, Wilmington, Del.
- Delaware State Hospital, Farnhurst, Del.
- Delray General Hospital, Detroit, Mich.
- Denmar Sanatorium, Denmar, W. Va.
- Des Moines Drug Co., Des Moines, Iowa.
- Detroit, Receiving Hospital of, Dept. Public Welfare, Detroit, Mich.
- Detroit Tuberculosis Sanatorium, Detroit, Mich.
- District Tuberculosis Hospital, Lima, Ohio.
- Doctors Hospital, New York, N. Y.
- Dolbey & Co., Edward P., Philadelphia, Pa.
- Douglas County Hospital, Omaha, Nebr.
- Duluth, City of, Health Department, Duluth, Minn.
- Duval County Hospital, Jacksonville, Fla.
- East Orange General Hospital, East Orange, N. J.
- Eastern Oregon State Tuberculosis Hospital, The Dalles, Ore.
- Eastern Maine General Hospital, Bangor, Maine.
- Eastern Oklahoma Hospital, Vinita, Okla.
- Eastern Shore Tuberculosis Sanatorium, Salisbury, Wicomico County, Md.
- Eastern State Hospital, Williamsburg, Va.
- Easton, Emergency Hospital, Easton, Md.
- Eau Claire County Asylum, Eau Claire, Wis.
- Edgewood Sanatorium, Marshallton, Del.
- Edward J. Meyer Memorial Hospital, Buffalo, N. Y.
- Eisele & Co., Nashville, Tenn.
- Eitel Hospital, Minneapolis, Minn.
- El Paso City-County Hospital, El Paso, Tex.
- Elgin State Hospital, Elgin, Ill.
- Elmhurst Community Hospital, Inc., Elmhurst, Ill.
- Emanuel Hospital School of Nursing, Portland, Oreg.
- Emma L. Bixby Hospital, Adrian, Mich.
- Ephraim McDowell Memorial Hospital, Danville, Ky.
- Empire State Thermometer Co., Inc., New York, N. Y.
- Englewood Hospital, Chicago, Ill.
- Erie County Penitentiary, Alden, N. Y.
- Ernest V. Cowell Memorial Hospital, The, Berkeley, Calif.
- Essex County Hospital, Cedar Grove, N. J.
- Evangelical Deaconess Home & Hospital, Marshalltown, Iowa.
- Evangelical Deaconess Hospital, Cleveland, Ohio.
- Evansville State Hospital, Evansville, Ind.
- Ex-Ell Instrument Corporation, Brooklyn, N. Y.
- Faichney Instrument Corporation, Wauertown, N. Y.
- Fairmount Hospital, Kalamazoo, Mich.
- Farrington Hospital, Portland, Maine.
- Faxton Hospital, Utica, N. Y.
- Fergus Falls State Hospital, Fergus Falls, Minn.
- Flink-Goodridge Hospital of Dillard University, New Orleans, La.
- Florida Sanitarium & Hospital, Orlando, Fla.
- Florida State Prison, Raiford, Fla.
- Forsyth County Sanatorium, Winston-Salem, N. C.
- Fox-Vliet Drug Co., The Wichita, Kans.
- Freas Glass Works, Francis L., Conshohocken, Pa.
- Frederick Ferris Thompson Hospital, Canandaigua, N. Y.
- Fresno General Hospital, Fresno, Calif.
- Fried & Lustig, Inc., New York, N. Y.
- Friends Hospital, Frankford, Philadelphia, Pa.
- Gallacher, James, Raymond, N. H.
- Galveston State Psychopathic Hospital, Galveston, Tex.
- Gardner State Hospital, East Gardner, Mass.
- Garfield Memorial Hospital, Washington, D. C.
- Garfield Park Community Hospital, Chicago, Ill.
- Gary, Public Schools of, Medical Inspection Department, Gary, Ind.

- Gaylord Farm Sanatorium, The Wallingford, Conn.
- Gaynor-Bagstad Co., Sioux City, Iowa.
- General Engraving Co., Brooklyn, N. Y.
- General Hospital, Kansas City, Mo.
- General Hospital #2, Kansas City, Mo.
- General Hospital of Everett, Everett, Wash.
- Genesee Hospital, The, Rochester, N. Y.
- George F. Geisinger Memorial Hospital, Danville, Pa.
- George W. Hubbard Hospital of Meharry Medical College, Nashville, Tenn.
- George Washington University Hospital, The, Washington, D. C.
- Georgia Warm Springs Foundation, Warm Springs, Ga.
- Germantown Dispensary & Hospital, Philadelphia, Pa.
- Gillette State Hospital, St. Paul, Minn.
- Gilpin Co., The Henry B., Baltimore, Md., Norfolk, Va., Washington, D. C.
- Good Samaritan Hospital, Portland, Oreg.
- Gowanda State Homeopathic Hospital, Helmuth, N. Y.
- Grace Hospital, Richmond, Va.
- Grady Hospital, Atlanta, Ga.
- Grafton County Hospital, Woodsville, Haverhill, N. H.
- Grafton State Hospital, North Grafton, Mass.
- Grand County Hospital, Moab, Utah.
- Grandview Hospital, La Crosse, Wis.
- Grant Hospital of Chicago, Chicago, Ill.
- Greeley Hospital, Greeley, Colo.
- Greenwell Springs Tuberculosis Hospital, Greenwell Springs, La.
- Greiner Thermometer Co., The, New York, N. Y.
- H-B Instrument Co., Inc., Philadelphia, Pa.
- Hackley Hospital, Muskegon, Mich.
- Hahnemann Hospital, San Francisco, Calif.
- Hahnemann Hospital of Scranton, The, Scranton, Pa.
- Hamilton County Home & Chronic Disease Hospital, Hartwell, Cincinnati, Ohio.
- Harper Hospital, Detroit, Mich.
- Harris Memorial Methodist Hospital, Fort Worth, Tex.
- Harrisburg Hospital, Harrisburg, Pa.
- Harrisburg Polyclinic Hospital, Harrisburg, Pa.
- Hartford Department of Public Welfare, Hartford, Conn.
- Haverhill City Infirmery, Haverhill, Mass.
- Haverhill Municipal Hospitals (Hale), Haverhill, Mass.
- Hawthorne Manufacturing Co., Collingswood, N. J.
- Healthwin Hospital (St. Joseph Co. Tuberculosis Hospital), South Bend, Ind.
- Henry Ford Hospital, Detroit, Mich.
- Henry Heywood Memorial Hospital, Gardner, Mass.
- Hermann M. Biggs Memorial Hospital, Ithaca, N. Y.
- Hermann Hospital, Houston, Tex.
- Hillcrest Memorial Hospital, Waco, Tex.
- Hillsdale Community Health Center, Hillsdale, Mich.
- Holy Cross Hospital, Chicago, Ill.
- Holyoke Hospital, Holyoke, Mass.
- Home for Consumptives, Chestnut Hill, Pa.
- Homeopathic Hospital, Reading, Pa.
- Homeopathic Hospital of Rhode Island, Providence, R. I.
- Hopemont Sanitarium, Hopemont, W. Va.
- Hospital Bureau of Standards & Supplies, Inc., New York, N. Y.
- Hospital Cottages for Children, The, Baldwinville, Mass.
- Hospital for Epileptics & School for Feeble-minded, Woodward, Iowa.
- Hospital of the Protestant Episcopal Church in Philadelphia, The, Philadelphia, Pa.
- Hospital of Saint Barnabas & for Women & Children, Newark, N. J.
- Hospital of St. Elizabeth of Hungary, The, New York, N. Y.
- House of Mercy Hospital, Pittsfield, Mass.
- Hudson County Hospital for Mental Diseases, Secaucus, N. J.
- Huntsville Hospital, Inc., Huntsville, Ala.
- Hurley Hospital, Flint, Mich.
- Hygrade Thermometer Co., The, Brooklyn, N. Y.
- Idaho Falls L. D. S. Hospital, The, Idaho Falls, Idaho.
- Idaho Soldiers Home, Boise, Idaho.
- Idaho, State Hospital South, Blackfoot, Idaho.
- Illinois Research Hospital, Chicago, Ill.
- Illinois Soldiers & Sailors Home, Quincy, Ill.
- Illinois State Penitentiary, Stateville Branch, Joliet, Ill.
- Illinois Surgical Institute for Children, Chicago, Ill. (In Principle.)
- Indiana State Prison, Michigan City, Ind.
- Indiana, State Soldiers' Home Hospital of, LaFayette, Ind.
- Institution for Male Defective Delinquents, Napanoch, N. Y.
- International Medical Center, New York, N. Y.
- Iowa State Medical Society, Des Moines, Iowa. (In Principle.)
- Iowa Hospitals, State University of, Iowa City, Iowa.
- Iroquois Hospital, The, Watseka, Ill.
- Isolation Hospital, Portland, Oreg.

- Irvington General Hospital, Irvington, N. J.
- Jackson County Isolation Hospital, Jackson, Mich.
- Jackson County Sanatorium, Jackson, Mich.
- Jamaica Hospital, The, Jamaica, N. Y.
- James W. Sheldon Memorial Hospital, Albion, Mich.
- James Walker Memorial Hospital, Wilmington, N. C.
- Jamison Sample Co., New York, N. Y.
- Jefferson County Sanatorium, Watertown, N. Y.
- Jefferson County Tuberculosis Hospital, Beaumont, Tex.
- Jersey City, Medical Center of, Jersey City, N. J. (In principle.)
- Jewish Hospital of Brooklyn, The, Brooklyn, N. Y.
- John Sealy Hospital, Galveston, Tex.
- Johns Hopkins Hospital, The, Baltimore, Md.
- Julietta Infirmary, Marion County, Indianapolis, Ind.
- Julius Marks Sanatorium, Lexington, Ky.
- Justice Drug Co., Greensboro, N. C.
- Juvenile Hall Clinic, Los Angeles, Calif.
- Kahler Corporation, The, (Operating the Kahler Colonial & Warrall Hospitals), Rochester, Minn.
- Kansas Hospitals, University of, Kansas City, Kans.
- Kansas State College, Department of Student Health, Manhattan, Kans. (In principle.)
- Kansas, State of, Topeka, Kans.
- Kensington Hospital for Women, Philadelphia, Pa.
- Kessling Thermometer Co., E., Brooklyn, N. Y.
- Kiefer Stewart Co., Indianapolis, Ind.
- King County Hospital System, Seattle, Wash.
- Kings Park State Hospital, Kings Park, N. Y.
- Kingston Hospital, The, Kingston, N. Y.
- Kiowa Indian Hospital, Lawton, Okla.
- Laguna Honda Home, San Francisco, Calif.
- Lake Julia Sanatorium, Puposky, Minn.
- Lake View Sanatorium, Madison, Wis.
- Lakeville State Sanatorium, Middleboro, Mass.
- Lancaster General Hospital, The, Lancaster, Pa.
- Lankenau Hospital, The, Philadelphia, Pa.
- Las Campanas Hospital, Compton, Calif.
- Lawrence Hospital, Bronxville, N. Y.
- Lawrence General Hospital, Lawrence, Mass.
- Lawrence & Memorial Associated Hospitals, The, New London, Conn.
- Lebanon Hospital, Bronx, N. Y.
- Leonard Morse Hospital, Natick, Mass.
- Lewis Memorial Maternity Hospital, Chicago, Ill.
- Lincoln County Hospital, Merrill, Wis.
- Lincoln State School & Colony, Lincoln, Ill.
- Lockport City Hospital, Lockport, N. Y.
- Logansport State Hospital, Logansport, Ind.
- Long Island College Hospital, The, Brooklyn, N. Y.
- Long Island Hospital, Boston Harbor, Mass.
- Los Angeles City Health Department, Los Angeles, Calif.
- Los Angeles County General Hospital, Los Angeles, Calif.
- Los Angeles Receiving Hospital, Los Angeles, Calif.
- Louisiana, State Colony & Training School, of Alexandria, La.
- Luther Hospital, Eau Claire, Wis.
- Lutheran Hospital, Cleveland, Ohio.
- Lutheran Hospital Society of Southern California, (The California Hospital), Los Angeles, Calif.
- Lyman School Infirmary, Westboro, Mass. (In principle.)
- Lynchburg State Colony, Colony, Va.
- Macon County Tuberculosis Sanatorium, Decatur, Ill.
- Macon Hospital, The, Macon, Ga.
- Macy's Bureau of Standards, New York, N. Y.
- Madison County Sanatorium, Edwardsville, Ill.
- Malden Hospital, The, Malden, Mass.
- Manchester, Health Department, Manchester, N. H.
- Margaret Hague Maternity Hospital, Jersey City, N. J.
- Marks Nathan Hall, Chicago, Ill.
- Mary Hitchcock Memorial Hospital, Hanover, N. H.
- Mary McClellan Hospital, Cambridge, N. Y.
- Maryland General Hospital, Baltimore, Md.
- Massachusetts, Commonwealth of, Purchasing Bureau, Boston, Mass.
- Massachusetts Eye & Ear Infirmary, Boston, Mass.
- Massachusetts General Hospital, Boston, Mass.
- Massachusetts Hospital School, Canton, Mass.
- Massillon City Hospital, The, Massillon, Ohio.
- Maternity Hospital, Inc., Minneapolis, Minn.
- Matteawan State Hospital, Beacon, N. Y.
- Mayview State Hospital, Mayview, Pa.
- McKeesport Hospital, McKeesport, Pa.
- McKesson & Robbins, Inc., New York, N. Y., and Los Angeles, Calif.
- McPherson County Hospital, McPherson, Kans.
- McRae Memorial Sanatorium, Alexander, Ark.

- Meinecke & Co., Inc., New York, N. Y.  
 Memorial Hospital, Houston, Tex.  
 Memorial Hospital, New York, N. Y.  
 Memorial Hospital The, Pawtucket, R. I.  
 Memorial Hospital, Roxborough, Philadelphia, Pa.  
 Mendocino State Hospital, Talmage, Calif.  
 Mercy Hospital, Buffalo, N. Y.  
 Mercy Hospital, Council Bluffs, Iowa.  
 Mercy Hospital, Fort Scott, Kans.  
 Mercy Hospital, Janesville, Wis.  
 Mercy Hospital, Oshkosh, Wis.  
 Mercy Hospital, San Diego, Calif.  
 Mercy Hospital, Scranton, Pa.  
 Mercy Hospital, Wilkes-Barre, Pa. (In principle.)  
 Mercy Hospital of Johnstown, The, Johnstown, Pa.  
 Mercy School of Nursing, Chicago, Ill.  
 Mesaba Clinic, Hibbing, Minn.  
 Methodist Hospital of Dallas, Dallas, Tex.  
 Methodist Hospital of Gary, Inc., The, Gary, Ind.  
 Metropolitan Life Insurance Co., New York, N. Y. (In principle.)  
 Metropolitan Life Insurance Co. Sanatorium, Mt. McGregor, N. Y.  
 Metropolitan State Hospital, Waltham, Mass.  
 Miami Valley Hospital, Dayton, Ohio.  
 Michigan State Sanatorium, Howell, Mich.  
 Middlesex Hospital, Middletown, Conn.  
 Middletown State Homeopathic Hospital, Middletown, N. Y.  
 Millard Fillmore Hospital, Buffalo, N. Y.  
 Milledgeville State Hospital, Milledgeville, Ga.  
 Miller Drug Sundry Co., Baltimore, Md.  
 Mills Hospital Supply Co., Chicago, Ill.  
 Milwaukee County Asylum for Chronic Insane, Wauwatosa, Wis.  
 Milwaukee County Hospital, Wauwatosa, Wis.  
 Milwaukee Health Department, Milwaukee, Wis.  
 Milwaukee Hospital, Milwaukee, Wis.  
 Milwaukee Sanitarium, Wauwatosa, Wis.  
 Miners Hospital, The, Frostburg, Md.  
 Minnesota Colony for Epileptics, Cambridge, Minn.  
 Minnesota School for Feeble Minded, Faribault, Minn.  
 Minnesota Soldiers Home, Minneapolis, Minn.  
 Minnesota, State Public School of, Owatonna, Minn.  
 Minnesota University Hospitals, Minneapolis, Minn.  
 Missouri, State Hospital No. 3, of Nevada, Mo.  
 Missouri, State Hospital No. 4, of Farmington, Mo.  
 Missouri State Prison, Jefferson City, Mo.  
 Monmouth Hospital, The, Monmouth, Ill. (In Principle.)  
 Monmouth Memorial Hospital, Long Branch, N. J.  
 Monongalia General Hospital, Morgantown, W. Va.  
 Monson State Hospital, Palmer, Mass.  
 Montana State Purchasing Department, Helena, Mont.  
 Montgomery Hospital, Norristown, Pa.  
 Morgan County Memorial Hospital, Martinsville, Ind.  
 Mt. Logan Sanatorium, Chillicothe, Ohio.  
 Mount Sinai Hospital School of Nursing, Chicago, Ill.  
 Mount Sinai Hospital, Cleveland, Ohio.  
 Mount Sinai Hospital, Milwaukee, Wis.  
 Mount Sinal Hospital, The, New York, N. Y.  
 Mountainside Hospital, The, Montclair, N. J.  
 Mueller & Co., V., Chicago, Ill.  
 Munroe Memorial Hospital, Ocala, Fla.  
 National Jewish Hospital, The, Denver, Colo.  
 Nebraska. Board of Control, of Lincoln, Nebr.  
 Nebraska Institution for Feeble Minded, Beatrice, Nebr.  
 Nebraska Hospital, University of, Omaha, Nebr.  
 New Castle Hospital, New Castle, Pa.  
 New England Deaconess Hospital, Boston, Mass.  
 New England Sanitarium & Hospital, Melrose, Mass.  
 New Jersey Sanatorium, Glen Gardner, N. J.  
 New Jersey State Village for Epileptics, Skillman, N. J.  
 New Orleans, City Hospital for Mental Diseases of, New Orleans, La.  
 New York Hospital, The, New York, N. Y.  
 New York Post Graduate Medical School & Hospital, New York, N. Y.  
 New York Medical College, Flower & Fifth Avenue Hospitals, New York, N. Y.  
 New York, State Institute for the Study of Malignant Diseases, of Buffalo, N. Y.  
 New York State Reconstruction Home, West Haverstraw, N. Y.  
 New York State Woman's Relief Corps Home, Oxford, N. Y.  
 Newark City Hospital, Newark, N. J.  
 Newcomb Hospital, Vineland, N. J.  
 Newton Hospital, Newton Lower Falls, Mass.  
 Niagara Falls Memorial Hospital, Inc., The, Niagara Falls, N. Y.  
 Niagara Sanatorium, Lockport, N. Y.

- Norfolk County Hospital, South Braintree, Mass.  
 Norfolk General Hospital, Inc., Norfolk, Va.  
 Norfolk State Hospital, Norfolk, Nebr.  
 North Dakota, State of, Bismarck, N. Dak.  
 North Dakota State Hospital, Jamestown, N. Dak.  
 North Dakota, State Laboratories Dept. of, Bismarck, N. Dak.  
 North Hudson Hospital, Weehawken, N. J.  
 Northampton State Hospital, Northampton, Mass.  
 Northern Wisconsin Colony & Training School, Chippewa Falls, Wis.  
 Northwest Texas Hospital, Amarillo, Tex.  
 Norton Memorial Infirmary, Louisville, Ky.  
 Norwegian Lutheran Deaconesses Home & Hospital, The, Brooklyn, N. Y.  
 Norwich State Hospital, Norwich, Conn.  
 Oak Park Hospital School of Nursing, Oak Park, Ill.  
 Oakland Park Sanatorium, Thief River Falls, Minn.  
 O'Connor Sanitarium, San Jose, Calif.  
 Ohio County Tuberculosis Sanatorium, Triadelphia, W. Va.  
 Ohio Penitentiary Hospital, Columbus, Ohio.  
 Ohio State Reformatory, Mansfield, Ohio.  
 Ohio Valley General Hospital, Wheeling, W. Va.  
 Oklahoma Baptist Hospital, Muskogee, Okla.  
 Olive View Sanatorium, Olive View, Calif.  
 Orange Memorial Hospital, Orange, N. J.  
 Oregon Fairview Home, Salem, Oreg.  
 Oregon Protective Society, Portland, Oreg.  
 Oregon State Hospital, Salem, Oreg.  
 Oregon State Tuberculosis Hospital, Salem, Oreg.  
 Orthopedic Hospital, Los Angeles, Calif.  
 Osawatomie State Hospital, Osawatomie, Kans.  
 Otter Tail County Sanatorium, Battle Lake, Minn.  
 Our Lady of Victory Hospital, Lackawanna, N. Y.  
 Overlook Hospital, Summit, N. J.  
 Owatonna City Hospital, Owatonna, Minn.  
 Pacific Pharmacy, San Pedro, Calif.  
 Paradise Valley Sanitarium & Hospital, National City, Calif.  
 Park Avenue Hospital, Rochester, N. Y.  
 Passavant Hospital of Pittsburgh, The, Pittsburgh, Pa.  
 Patton State Hospital, Patton, Calif.  
 Patzig Testing Laboratories, Des Moines, Iowa.  
 Paxton Community Hospital, Paxton, Ill.  
 Peacock Surgical Co., Inc., Shreveport, La.  
 Pecorella Manufacturing Co., Brooklyn, N. Y.  
 Pembroke Sanatorium, Pembroke, N. H.  
 Pennsylvania Bureau of Animal Industry, Harrisburg, Pa.  
 Pennsylvania Hospital, Philadelphia, Pa.  
 Pennsylvania, Hospital of the University of, Philadelphia, Pa.  
 Pennsylvania, Trustees of the University of, Philadelphia, Pa.  
 Peoria Municipal Tuberculosis Sanitarium, Peoria, Ill.  
 Philadelphia General Hospital, Philadelphia, Pa.  
 Philadelphia State Hospital, Philadelphia, Pa.  
 Physician—School for Blind, Vinton, Iowa.  
 Physicians Supply Co. of Philadelphia, Philadelphia, Pa.  
 Pierce County Hospital, Tacoma, Wash.  
 Pines Sanitoria, Inc., The, Shreveport, La.  
 Pleasant View Sanatorium, Amherst, Amherst, Ohio.  
 Pontiac General Hospital, Pontiac, Mich.  
 Port Huron Emergency Hospital, Port Huron, Mich.  
 Pownal State School, Pownal, Maine.  
 Presbyterian Hospital, Denver, Colo.  
 Presbyterian Hospital in the City of New York, The, New York, N. Y.  
 Presbyterian Hospital of Pittsburgh, The, Pittsburgh, Pa.  
 Preston School of Industry, Ione, Calif.  
 Protestant Deaconess Hospital, Evansville, Ind.  
 Providence Hospital, Mobile, Ala.  
 Providence Lying-In Hospital, Providence, R. I.  
 Providence Retreat, Buffalo, N. Y.  
 Puritee Thermometer Co., Brooklyn, N. Y.  
 Quincy City Hospital, Quincy, Mass.  
 Reading Hospital, The, W. Reading, Pa.  
 Research Hospital, Kansas City, Mo.  
 Retreat Mental Hospital, Retreat, Pa.  
 Retreat for the Sick, Richmond, Va.  
 Rex Hospital, Raleigh, N. C.  
 Rhode Island Hospital, Providence, R. I.  
 Rhode Island, State Infirmary, of Howard, R. I.  
 Rhode Island, State Hospital for Mental Diseases, of Howard, R. I.  
 Rhode Island State Sanatorium, Wallum Lake, R. I.

- Rider Co., P. L., Worcester, Mass.  
 River Crest Sanitarium, Astoria, L. I., N. Y.  
 Riverside Hospital, Newport News, Va.  
 Robert B. Green Hospital, San Antonio, Tex.  
 Robert Packer Hospital, Sayre, Pa.  
 Rochester General Hospital, Rochester, Pa.  
 Rochester Municipal Hospital, Rochester, N. Y.  
 Rochester St. Mary's Hospital of the Sisters of Charity, Rochester, N. Y.  
 Rockford Hospital, Rockford, Ill.  
 Rockingham Memorial Hospital, Harrisonburg, Va.  
 Rockland State Hospital, Orangeburg, N. Y.  
 Ross, Inc., Will, Milwaukee, Wis.  
 Ruckstuhl Co., Inc., Chas. S., St. Louis, Mo.  
 Sailors' Snug Harbor Hospital, New Brighton, Staten Island, N. Y.  
 St. Anne's Hospital Corporation, Fall River, Mass.  
 St. Anthony Hospital, Rockford, Ill.  
 St. Anthonys Hospital, Terre Haute, Ind.  
 St. Barnabas Hospital, Minneapolis, Minn.  
 St. Bernardine's Hospital, San Bernardino, Calif.  
 St. Charles Hospital, Aurora, Ill.  
 St. Charles Hospital for Crippled Children, Port Jefferson, L. I., N. Y.  
 St. Elizabeth Hospital, Granite City, Ill.  
 St. Elizabeth Hospital, Brighton, (Boston), Mass.  
 St. Elizabeth Hospital, Lincoln, Nebr.  
 St. Elizabeth Hospital, Elizabeth, N. J.  
 St. Elizabeths Hospital, Washington, D. C.  
 St. Francis Hospital, Evanston, Ill.  
 St. Francis Hospital, Trenton, N. J.  
 St. Francis Hospital, Poughkeepsie, N. Y.  
 St. Helena Sanitarium & Hospital, Sanitarium, (Napa County), Calif.  
 St. John's Guild, New York, N. Y.  
 St. John's General Hospital, N. S., Pittsburgh, Pa.  
 St. John's Hospital, Brooklyn, N. Y.  
 St. John's Hospital, Lowell, Mass.  
 St. John's Hospital Pharmacy Department, Springfield, Ill.  
 St. Johns Hospital School of Nursing, Tulsa, Okla.  
 St. Joseph Children's & Maternity Hospital, Scranton, Pa.  
 St. Joseph Hospital, Chicago, Ill.  
 St. Joseph's Hospital, Bellingham, Wash.  
 St. Joseph's Hospital, Bloomington, Ill.  
 St. Joseph Hospital, Mishawaka, Ind.  
 St. Joseph's Hospital, San Francisco, Calif.  
 St. Joseph's Hospital, Carbondale, Pa.  
 St. Joseph's Hospital, Vancouver, Wash.  
 St. Joseph's Hospital, Lancaster, Pa.  
 St. Lawrence Hospital, Lansing, Mich.  
 St. Louis, City Sanitarium, of St. Louis, Mo.  
 St. Louis Isolation Hospital, St. Louis, Mo.  
 St. Luke's Hospital, Aberdeen, S. Dak.  
 St. Luke's Hospital, Davenport, Iowa.  
 St. Luke's Hospital, Spokane, Wash.  
 St. Luke's Hospital, Milwaukee, Wis.  
 St. Luke's Hospital, Bethlehem, Pa.  
 St. Luke's Hospital, Cleveland, Ohio.  
 St. Luke's Hospital, Jacksonville, Fla.  
 St. Luke's Hospital, New Bedford, Mass.  
 St. Luke's & Children's Medical Center, Philadelphia, Pa.  
 St. Luke's Hospital of Newburgh, Newburgh, N. Y.  
 St. Luke's Hospital & Nurses Training School, Boise, Idaho.  
 St. Luke's Hospital, Racine, Wis.  
 St. Margaret's Hospital, Dorchester, Mass.  
 St. Mary's General Hospital, Lewiston, Maine.  
 St. Mary's Hospital, East St. Louis, Ill.  
 St. Mary's Hospital, Columbus, Nebr.  
 St. Mary's Hospital, Duluth, Minn.  
 St. Mary's Hospital, Cincinnati, Ohio.  
 St. Mary's Hospital, Galesburg, Ill.  
 St. Mary's Hospital, Superior, Wis.  
 St. Mary's Hospital, Clarksburg, W. Va.  
 St. Mary's Hospital for Children, Inc., New York, N. Y.  
 St. Peter State Hospital, St. Peter, Minn.  
 St. Rita Hospital, Lima, Ohio.  
 St. Therese Hospital, Waukegan, Ill.  
 St. Thomas Hospital, Akron, Ohio.  
 St. Vincent's Hospital, School of Nursing, New York, N. Y.  
 St. Vincent's Hospital, Toledo, Ohio.  
 St. Vincent's Hospital for Women & Children, Philadelphia, Pa.  
 Salem Hospital, Salem, Mass.  
 Samaritan Hospital, Troy, N. Y.  
 San Diego, County General Hospital, of San Diego, Calif.  
 San Francisco, City & County of, San Francisco, Calif.  
 San Joaquin General Hospital, French Camp, Calif.  
 Santa Clara County Hospital, San Jose, Calif.  
 Santa Cruz County Hospital, Santa Cruz, Calif.  
 Schenectady County Tuberculosis Hospital, Schenectady, N. Y.  
 Schieffelin & Co., New York, N. Y.  
 Schiltz Memorial Hospital, American Falls, Idaho.  
 Schlegelmilch Bros., Long Island City, N. Y.  
 Schneider, R. F., Jersey City, N. J.  
 Seaside Memorial Hospital, Long Beach, Calif.

- Seaside, The (State of Conn.), Waterford, Conn.
- Seattle General Hospital, Seattle, Wash.
- Shadyside Hospital, Pittsburgh, Pa.
- Shawano Municipal Hospital, Shawano, Wis.
- Shawnee City Hospital, Shawnee, Okla.
- Shonghum Mountain Sanatorium, Morristown, N. J.
- Sinai Hospital of Baltimore, Baltimore, Md.
- Sisters of the Poor of St. Francis, Brooklyn, N. Y.
- Sisters of the Sorrowful Mothers, Oshkosh, Wis.
- Sisters of the Third Order of St. Francis, Inc., The, Peoria, Ill.
- Sonoma State Home, Eldridge, Calif.
- South Baltimore General Hospital, Baltimore, Md.
- South Carolina Baptist Hospital, Columbia, S. C.
- South Carolina State Hospital, Columbia, S. C.
- South Carolina, University of, Columbia, S. C.
- South Dakota State School & Home for the Feeble-Minded, Redfield, S. Dak.
- Southern Surgical Supply Co., Memphis, Tenn.
- Southwestern Minnesota Sanatorium, Worthington, Minn.
- Southwestern Presbyterian Sanatorium, The, Albuquerque, N. Mex.
- Spartanburg General Hospital, Spartanburg, S. C.
- Springfield State Hospital, Sykesville, Md.
- Stanley Supply Co., New York, N. Y.
- Staten Island Hospital, The, New York, N. Y.
- Sterling Thermometer Co., Brooklyn, N. Y.
- Stevens Clinic Hospital, Welch, W. Va.
- Stony Brook Retreat, Keene, Calif.
- Strong Memorial Hospital, Rochester, N. Y.
- Suburban General Hospital, Bellevue, Pittsburgh, Pa.
- Sunny View Sanatorium, Winnebago, Wis.
- Sunnyrest Sanatorium, Crookston, Minn.
- Sunshine Sanatorium, Grand Rapids, Mich.
- Surgical Supply Co., Jacksonville, Fla.
- Sutter Hospital of Sacramento, Sacramento, Calif.
- Swedish Hospital, The, Seattle, Wash.
- Syracuse, General Hospital of, Syracuse, N. Y.
- Syracuse University, Syracuse, N. Y.
- Tacoma General Hospital, Tacoma, Wash.
- Tacoma Health Department, Tacoma, Wash.
- Tampa Municipal Hospital, Tampa, Fla.
- Taunton State Hospital, Taunton, Mass.
- Taylor Instrument Co's., Rochester, N. Y.
- Texas, State Tuberculosis Sanatorium, of Sanatorium, Tex.
- Thomas D. Lee Memorial Hospital, Ogden, Utah.
- Thomasville, City Memorial Hospital, of Thomasville, N. C.
- Toledo Hospital, The, Toledo, Ohio.
- Tompkins County Memorial Hospital, Ithaca, N. Y.
- Trinity Hospital, Minot, N. Dak.
- Tulare-Kings Counties Joint Tuberculosis Hospital, Springville, Calif.
- Union Hospital of Terre Haute, The, Terre Haute, Ind.
- Union Memorial Hospital, Baltimore, Md.
- United States Hospital, Port Chester, N. Y.
- Unity Hospital, Brooklyn, N. Y.
- University Hospital, Baltimore, Md.
- Utah State Hospital, Provo, Utah.
- Vassar Brothers Hospital, Poughkeepsie, N. Y.
- Ventura County Hospital, Ventura, Calif.
- Vermillion County Hospital, Clinton, Ind.
- Vermont, State Prison Hospital, of Windsor, Vt.
- Vermont State Hospital, Waterbury, Vt.
- Virginia, State Farm Hospital, of State Farm, Va.
- W. A. Foote Hospital, Jackson, Mich.
- Walsh, Office of William Henry, Chicago, Ill.
- Wardle Bros., Hudson, N. Y.
- Washington Hospital, Washington, Pa.
- Washington County Hospital, Hagerstown, Md.
- Washington County Hospital, Washington, Iowa.
- Washington, University of, Seattle, Wash.
- Watkins Memorial Hospital, (University of Kansas), Lawrence, Kans.
- Watts Hospital, Durham, N. C.
- Waukesha County Asylum & County Home, Waukesha, Wis.
- Waukesha Memorial Hospital, Waukesha, Wis.
- Weimar Joint Sanatorium, Weimar, Calif.
- Weinhagen & Hespe, Inc., New York, N. Y.
- Welborn Walker Hospital, Evansville, Ind.
- Wentworth Hospital, Dover, N. H.
- Wesley Hospital, Oklahoma City, Okla.
- West Baltimore General Hospital, Baltimore, Md.

- West Side Hospital & Dispensary, New York, N. Y.  
 Westbrook Sanatorium, Inc., Richmond, Va.  
 Western Oklahoma Hospital, Supply, Okla.  
 Western Oklahoma Tuberculosis Sanatorium, Clinton, Okla.  
 Western State Hospital, Fort Steilacoom, Wash.  
 Western Surgical Supply Co., Ltd., Los Angeles, Calif.  
 Weston State Hospital, Weston, W. Va.  
 Wetzel County Hospital, New Martinsville, W. Va.  
 W. H. Groves Latter-Day Saints Hospital, Salt Lake City, Utah.  
 Whidden Memorial Hospital, Everett, Mass.  
 White Memorial Hospital, Los Angeles, Calif.  
 Wichita General Hospital, Wichita Falls, Tex.  
 Wilkes-Barre General Hospital, Wilkes-Barre, Pa.  
 Will County Tuberculosis Sanatorium, Joilet, Ill.  
 Willard State Hospital, Willard, N. Y.  
 William W. Backus Hospital, The, Norwich, Conn.  
 Williamsport Hospital, The, Williamsport, Pa.  
 Wills Hospital, Philadelphia, Pa.  
 Wilmington General Hospital, Wilmington, Del.  
 Winchester Memorial Hospital, Winchester, Va.  
 Winfield Sanatorium, The, Winfield, Ill.  
 Wisconsin, State of, Madison, Wis.  
 Wisconsin State Prison, Waupun, Wis.  
 Wisconsin State Reformatory, Green Bay, Wis.
- Wisconsin State Sanatorium, Statesan, Wis.  
 Woman's Hospital in the State of New York, New York, N. Y.  
 Women's & Children's Hospital, Toledo, Ohio.  
 Woonsocket Hospital, Woonsocket, R. I.  
 Worcester City Hospital, Worcester, Mass.  
 Worcester State Hospital, Worcester, Mass.  
 Wrentham State School, Wrentham, Mass.  
 Wyandotte General Hospital, Wyandotte, Mich.  
 Wyoming State Hospital, Evanston, Wyo.  
 Yankton State Hospital, Yankton, S. Dak.  
 York Hospital, York, Pa.  
 Ypsilanti State Hospital, Ypsilanti, Mich.
- U. S. GOVERNMENT
- Agriculture, Department of, Washington, D. C.  
 Marine Hospital, San Francisco, Calif., and Mobile, Ala.  
 National Cancer Institute of National Institute of Health, Bethesda, Md.  
 Naval Hospital, Pensacola, Fla.  
 Navy Department, Bureau of Medicine & Surgery, Washington, D. C.  
 United States Navy, U. S. S. Relief, New York, N. Y.  
 United States Public Health Service, Washington, D. C. and Leavenworth, Kans.  
 Treasury Department, Washington, D. C.  
 Veterans Administration, Washington, D. C.  
 War Department, Washington, D. C.

## COMMERCIAL STANDARDS

CS No.	Item
0-40.	Commercial standards and their value to business (third edition).
1-42.	Clinical thermometers (third edition).
2-30.	Mopsticks.
3-40.	Stoddard solvent (third edition).
4-29.	Staple porcelain (all-clay) plumbing fixtures.
5-40.	Pipe nipples; brass, copper, steel, and wrought iron.
6-31.	Wrought-iron pipe nipples (second edition). Superseded by CS5-40.
7-29.	Standard weight malleable iron or steel screwed unions.
8-41.	Gage blanks (third edition).
9-33.	Builders' template hardware (second edition).
10-29.	Brass pipe nipples. Superseded by CS5-40.
11-41.	Moisture regains of cotton yarns (second edition).
12-40.	Fuel oils (fifth edition).
13-42.	Dress patterns (third edition).
14-39.	Boys' button-on waists, shirts, junior and polo shirts (made from woven fabrics) (second edition).
15-29.	Men's pajamas.
16-29.	Wall paper.
17-42.	Diamond core drill fittings (third edition).
18-29.	Hickory golf shafts.
19-32.	Foundry patterns of wood (second edition).
20-42.	Staple vitreous china plumbing fixtures (third edition).
21-39.	Interchangeable ground-glass joints, stopcocks, and stoppers (fourth edition).
22-40.	Builders' hardware (nontemplate) (second edition).
23-30.	Feldspar.
24-30.	Standard screw threads.
25-30.	Special screw threads.
26-30.	Aromatic red cedar closet lining.
27-36.	Mirrors (second edition).
28-32.	Cotton fabric tents, tarpaulins, and covers.
29-31.	Staple seats for water-closet bowls.
30-31.	Colors for sanitary ware.
31-38.	Wood shingles (fourth edition).
32-31.	Cotton cloth for rubber and pyroxylin coating.
33-32.	Knit underwear (exclusive of rayon).
34-31.	Bag, case, and strap leather.
35-42.	Plywood (hardwood and eastern red cedar) (second edition).
36-33.	Fourdrinier wire cloth (second edition).
37-31.	Steel bone plates and screws.
38-32.	Hospital rubber sheeting.
39-37.	Wool and part wool blankets (second edition). (Withdrawn as commercial standard, July 14, 1941.)
40-32.	Surgeons' rubber gloves.
41-32.	Surgeons' latex gloves.
42-35.	Fiber insulating board (second edition).
43-32.	Grading of sulphonated oils.
44-32.	Apple wraps.
45-40.	Douglas fir plywood (domestic grades) (fourth edition).
46-40.	Hosiery lengths and sizes (third edition).
47-34.	Marking of gold-filled and rolled-gold-plate articles other than watch cases.
48-40.	Domestic burners for Pennsylvania anthracite (underfeed type) (second edition).
49-34.	Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50-34.	Binders board for bookbinding and other purposes.
51-35.	Marking articles made of silver in combination with gold.
52-35.	Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53-35.	Colors and finishes for cast stone.

CS No.	Item
54-35.	Mattresses for hospitals.
55-35.	Mattresses for institutions.
56-41.	Oak flooring (second edition).
57-40.	Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings (second edition).
58-36.	Woven elastic fabrics for use in overalls (overall elastic webbing).
59-41.	Woven textile fabrics—testing and reporting (third edition).
60-36.	Hardwood dimension lumber.
61-37.	Wood-slat venetian blinds.
62-38.	Colors for kitchen accessories.
63-38.	Colors for bathroom accessories.
64-37.	Walnut veneers.
65-38.	Wool and part-wool fabrics.
66-38.	Marking of articles made wholly or in part of platinum.
67-38.	Marking articles made of karat gold.
68-38.	Liquid hypochlorite disinfectant, deodorant, and germicide.
69-38.	Pine oil disinfectant.
70-41.	Phenolic disinfectant (emulsifying type) (second edition) (published with CS71-41).
71-41.	Phenolic disinfectant (soluble type) (second edition) (published with CS70-41).
72-38.	Household insecticide (liquid spray type).
73-38.	Old growth Douglas fir standard stock doors.
74-39.	Solid hardwood wall paneling.
75-42.	Automatic mechanical draft oil burners designed for domestic installations (second edition).
76-39.	Hardwood interior trim and molding.
77-40.	Sanitary cast-iron enameled ware.
78-40.	Ground-and-polished lenses for sun glasses (second edition) (published with CS79-40).
79-40.	Blown, drawn, and dropped lenses for sun glasses (second edition) (published with CS78-40).
80-41.	Electric direction signal systems other than semaphore type for commercial and other vehicles subject to special motor vehicle laws (after market).
81-41.	Adverse-weather lamps for vehicles (after market).
82-41.	Inner-controlled spotlamps for vehicles (after market).
83-41.	Clearance, marker, and identification lamp for vehicles (after market).
84-41.	Electric tail lamps for vehicles (after market).
85-41.	Electric license-plate lamps for vehicles (after market).
86-41.	Electric stop lamps for vehicles (after market).
87-41.	Red electric warning lanterns.
88-41.	Liquid-burning flares.
89-40.	Hardwood stair treads and risers.
90-	(Reserved for power shovels and cranes).
91-41.	Factory fitted Douglas fir entrance doors.
92-41.	Cedar, cypress and redwood tank stock lumber.
93-41.	Portable electric drills (exclusive of high frequency).
94-41.	Calking lead.
95-41.	Lead pipe.
96-41.	Lead traps and bends.
97-42.	Electric supplementary driving and passing lamps for vehicles (after market).
98-42.	Artists' oil paints.
99-42.	Gas floor furnaces—gravity circulating type.
100-42.	Multiple-coated, porcelain-enameled steel utensils.
101-43.	Flue-connected, oil-burning space heaters equipped with vaporizing pot-type burners.
102-	(Reserved for Diesel and fuel-oil engines).
103-42.	Cotton and rayon velour.

NOTICE—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice may secure copies of the above standards, while the supply lasts, by addressing the Division of Trade Standards, National Bureau of Standards, Washington, D. C.